GLOBAL DIVERSIFICATION STRATEGY AND CORPORATE PROFIT PERFORMANCE

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Based on a sample of 62 multinationals, this paper examines the impact of global diversification strategy on corporate profit performance by integrating the product and the international market dimensions of diversification. The results suggest that the corporate profit performance impact of related and unrelated diversification varies contingent upon the extent of a firm’s international market diversification. One important lesson of this work is that both business strategy researchers and managers should review corporate diversification as having distinct yet interactive strategic dimensions—product and international market—and they would do well to recognize both the different and the joint effect of these dimensions on corporate profit performance.

As an increasing number of firms have pursued global diversification, the corporate profit performance impact of global diversification strategy has become an important issue. There are two major streams of research examining the profit performance impact of corporate diversification. One stream of research focuses on the product dimension of corporate diversification (e.g. Rumelt, 1974, 1982; Montgomery, 1979; Christensen and Montgomery, 1981; Palepu, 1985), the other on the international market dimension (e.g. Rugman, 1979; Wolf, 1975; Leftwich, 1974; Severn and Laurence, 1974).

In dealing with global diversification strategy, however, neither of these two approaches is appropriate, since global diversification encompasses both product and international market dimensions (e.g. Pearce, 1983). Thus to examine the corporate profit performance impact of global diversification strategy, this paper integrates the product and international market dimensions of diversification. Based on a sample of 62 multinationals, the paper investigates corporate profit performance differences across groups of firms pursuing various strategic modes of global diversification. In this study profit performance includes not only profitability but also profit stability, since a diversification strategy with a favorable return may not be managerially acceptable due to its risk.

This paper is organized as follows. In the first section the relevant literature on the relationship between firms’ diversification strategies and their profit performance is reviewed. In the next section a global diversification measure is presented, in which both the product and the international market dimensions can be captured, and which develops our hypotheses to be tested. The data and methodology are discussed in the third and fourth sections. The empirical analysis and results of our study are presented in the fifth section. In the final section of this paper we discuss the implications of our findings for research and practice.

LITERATURE REVIEW

Product diversification and profitability

Two streams of literature, one in industrial organization and the other in strategic management, have sought to determine the impact of
product diversification strategy on profitability. These two research traditions differ both in their theoretical development of hypotheses and reported findings.

In the industrial organization literature the development of hypotheses has relied on assumptions regarding the impact of diversification on market power. The leading hypothesis in this area has been that diversification increases market power and should therefore result in greater profitability for the diversifier (e.g. Caves, 1981; Miller, 1973). Empirical results of industrial organizational studies (e.g. Gort, 1962; Arnould, 1969; Markham, 1973), however, have not found a positive relationship between the extent of diversification and profitability. In fact, Markham (1973) established a significantly negative relationship between a firm's degree of diversification and profitability. Subsequent findings in the strategic management literature suggest that these results may be attributable to a failure by industrial organization economist to differentiate between diversification across and diversification within industries.

Theoretical development in the strategic management literature focuses on economies of scope and synergies in business operations resulting from diversification, rather than on market power. This stream of literature accordingly classifies firms by the nature of their diversification strategies as well as the extent of their diversification (e.g. Palepu, 1985; Montgomery, 1982; Rumelt, 1974, 1982; Wrigley, 1970). Two distinct modes of diversification have been identified: unrelated and related. Unrelated diversifiers have been defined as firms that diversify predominantly across industries, while related diversifiers have been defined as firms that diversify predominantly within industries (e.g. Palepu, 1985). Related diversifiers, obtaining economies of scope and synergies, are hypothesized to exhibit higher levels of profitability than unrelated diversifiers. This hypothesis, first supported by Rumelt (1974), has been confirmed by numerous subsequent studies (e.g. Suzuki, 1980; Christensen and Montgomery, 1981; Bettis and Hall, 1982; Palepu, 1985).

Product diversification and profit stability

The arguments linking diversification to profit stability revolve around the portfolio notion, which suggests that investing in diversified stock with non-correlated profits can reduce the volatility of a firm's total profits (e.g. Markowitz, 1959; Tobin, 1950). The portfolio notion was applied to product diversification. Nathanson and Cassano (1982), for example, posited that product diversification may reduce the variance of a firm's total profits, since the uncertainty of several profit streams combined is almost always less than the uncertainty of each profit stream independently, provided the profit streams are imperfectly correlated. Several empirical studies (e.g. Westerfield, 1970; McDougall and Round, 1984) found that indeed product diversifiers enjoy higher profit stability than non-diversifiers.

The stability impact of product diversification may be further differentiated by distinguishing between related and unrelated diversification. Specifically, the extent of risk reduction through unrelated diversification may exceed that which can be achieved through related diversification. This is because unrelated diversification may well reduce industry-specific systematic risk since it involves diversification across multiple industries, whereas related diversification, occurring within an industry, cannot do so. Industry-specific systematic risk is the risk common to all firms operating within a given industry (Sauvain, 1959; 371-372).

International market diversification and profitability

Research on international market diversification (e.g. Severn and Laurence, 1974; Leftwich, 1974; Wolf, 1975; Rugman, 1979) has found a positive relationship between the intensity of international market operations and profitability. Rugman (1979) argued that the higher levels of profitability for multinationals can be explained by the international market imperfection theory developed by industrial organization economists (e.g. Kindleberger, 1968; Hymer, 1970); they viewed international market operations as an oligopolistic or monopolistic response to market imperfections. This view of industrial organization economists was supported in a recent study by Dubin (1980). Dubin found that the desire to capitalize on proprietary parent firm skills, highly developed but underutilized, was one of the characteristics of systematic importance in international acquisitions.
Another explanation for the positive impact of international market operations on profitability was offered by Caves (1974). Caves argued for the existence of a strong affinity between international operations and product differentiation which is in turn positively related to entry barriers, industry concentration, and thus profitability (e.g. Bain, 1951; Mann, Henning and Meehan, 1967; Wright, 1978).

International market diversification and profit stability

Caves (1982) proposed that international market diversification has the effect of stabilizing overall returns. The rationale behind this argument is that underlying economic conditions and major political climates tend to be uncorrelated across different international market areas.

Several other studies (e.g. Rugman, 1979; Miller and Pras, 1980; Wolf, 1977) have also argued that geographic market diversification through foreign investment stabilizes a firm's profits. Specifically, differences in the goods and factor markets across geographic areas are likely to exist, stabilizing a firm's overall returns. As the international product life cycle theory suggests (Vernon, 1966), differences in goods markets arise from demand and supply variations across international market areas. Variations in factor markets across geographic market areas result from differences in the activities of trade unions in labor markets, differences in rates of return on foreign capital, and differences in factor prices.

GLOBAL DIVERSIFICATION MEASUREMENT AND HYPOTHESES

In analyzing the profit performance impact of global diversification strategy, we need a measure in which both the product and the international market dimensions of diversification can be captured. Kim (1988) has constructed such a measure by extending the Jacquemin-Berry entropy measure of diversification (1979) into the global context. This approach has promise because it allows business strategy researchers not only to maintain computational simplicity and objectivity but also to decompose a firm's diversification into managerially meaningful elements. Recent studies (Palepu (1985) in a domestic context and Kim (1986) in a global context) demonstrated the above merits of this entropy measure in examining the economic performance impact of corporate diversification strategy. The detailed discussion on the conceptual and methodological development of this global diversification measure can be found in Kim (1988).

This measure, employed in our study, is designed to distinguish among three managerially meaningful elements of corporate global diversification, these being: unrelated diversification (UD), reflecting the extent of diversification across industry segments; global market diversification (GMD), reflecting the extent of the global market dispersion of a firm's operations; and global related diversification (GRD), reflecting the extent of global diversification across business segments within the industry segments of a firm. The measure thus provides four indices for each firm: (1) the index of UD; (2) the index of GMD; (3) the index of GRD; and (4) the index of total diversification (DT) which is equal to the sum of (1), (2), and (3). The definition and the detailed technical demonstration of the measure are presented in the Appendix.

Akin to Jacquemin and Berry (1979), SIC codes are used to define industry and business segments, with two-digit SIC codes corresponding to industry segments and four-digit SIC codes corresponding to business segments. The use of SIC codes in diversification studies has been well supported (e.g. Montgomery, 1982). Akin to Miller and Pras (1980) and Hirsch and Lev (1971), homogeneous groupings of countries, detailed in the data section, are used to define international market areas.

The three indices of the measure—UD, GMD, GRD—lead to the identification of four groups of firms that pursue distinct strategic modes of global diversification. These are: related diversifiers (RD) with high global market diversification (HG) hereafter, referred to as RD-HG or Group 1; related diversifiers (RD) with low global market diversification (LG) hereafter, referred to as RD-LG or Group 2; unrelated diversifiers (UD) with high global market diversification (HG) hereafter, referred to as UD-HG or Group 3; unrelated diversifiers (UD) with low global market diversification (LG) hereafter, referred to as UD-LG or Group 4. Thus
both related and unrelated diversifiers are subclassified based on the extent of their global market diversification.

To classify firms into one of the four groups, the sample firms were first split into four classifications based on the product diversification strategies they pursued. This was accomplished in the following manner. A sample mean was first computed for both UD and GRD. Firms with above-mean GRD scores and below-mean UD scores were designated global related diversifiers. Firms with above-mean UD scores and below-mean GRD scores were designated global unrelated diversifiers. Firms with below-mean UD scores and below-mean GRD scores were designated nondiversifiers, and firms scoring above the mean on both indices were designated dual-strategy diversifiers. In order to compare firms pursuing distinctly different strategic modes of diversification, similar to Palepu (1985), this study omitted all firms belonging to the latter two classifications from final analysis. Firms in the remaining two classifications, global related and unrelated diversifiers, were then further subclassified by the extent (high/low) of their global market diversification. Firms with above-mean GMD scores were classified as high global market diversifiers, while firms with below-mean GMD scores were classified as low global market diversifiers.

This study examines the profit growth and profit stability impact of the above identified four modes of global diversification strategies. Similar to Palepu (1985), we use profit growth rather than the profitability level itself as the profitability measure. Since firms can have very different starting levels of profitability, using longitudinal data (improvement over firms’ starting profitability levels, i.e. change in profitability over the time period of a study) rather than cross-sectional data (absolute levels of profitability) may better reflect the profitability impact of specific diversification strategies. With this in mind we can make the following hypotheses based on the preceding literature review.

The arguments in the international business literature linking global market diversification to profit performance lead to the proposition that the higher the global market diversity firm has in its operations, the better are its chances of obtaining supernormal profit growth and stability. This suggests that the profit performance of firms pursuing the same strategic mode of product diversification can vary depending on the extent of their global market diversification. This leads to the following hypotheses.

Hypothesis 1a: On average, the profit growth of RD-HG (Group 1) will be greater than that of RD-LG (Group 2).

Hypothesis 1b: On average, the profit stability of RD-HG (Group 1) will be higher than that of RD-LG (Group 2).

Hypothesis 2a: On average, the profit growth of UD-HG (Group 3) will be greater than that of UD-LG (Group 4).

Hypothesis 2b: On average, the profit stability of UD-HG (Group 3) will be higher than that of UD-LG (Group 4).

The arguments in strategic management literature linking product diversification to profit performance lead to the proposition that related diversifiers are apt to achieve higher profit growth but lower profit stability than unrelated diversifiers. This suggests that the profit performance of firms pursuing the same mode (low/high) of global market diversification may vary depending on their strategic mode of product diversification. Hence,

Hypothesis 3a: On average, the profit growth of RD-HG (Group 1) will be greater than that of UD-HG (Group 3).

Hypothesis 3b: On average, the profit stability of RD-HG (Group 1) will be lower than that of UD-HG (Group 3).

Hypothesis 4a: On average, the profit growth of RD-LG (Group 2) will be greater than that of UD-LG (Group 4).

Hypothesis 4b: On average, the profit stability of RD-LG (Group 2) will be lower than that of UD-LG (Group 4).

Overall, the preceding arguments lead to the following additional hypotheses:

Hypothesis 5a: On average, the profit growth of RD-HG (Group 1) is greater than that of UD-LG (Group 4).
Hypothesis 5b: On average, the profit stability of RD-HG (Group 1) is not significantly different from that of UD-LG (Group 4).

Hypothesis 6a: On average, the profit growth of RD-LG (Group 2) is not significantly different from that of UD-HG (Group 3).

Hypothesis 6b: On average, the profit stability of RD-LG (Group 2) is lower than that of UD-HG (Group 3).

Hypothesis 5b reflects the absence of a priori reasoning with regard to the superiority of unrelated diversification over high global market diversification or vice-versa in achieving supernormal profit stability. Similarly, the superiority of related diversification over high global market diversification or vice-versa in achieving supernormal profit growth is ambivalent in the literature as reflected in Hypothesis 6a. A comment on the lack of theoretical development concerning this issue can be found in a previous study by Miller and Pras (1980).

DATA

We started with 130 multinational companies, randomly selected from Dun and Bradstreet’s ‘America’s Corporate Families and International Affiliates’. Scores for the three diversification indices—UD, GMD, GRD—of each firm were computed based on the measure presented in the Appendix. We then eliminated 19 firms from further analysis. Attrition occurred due to unavailability of sufficient data on profits for the full 4-year period studied (1982–85) for six privately held firms that did not disclose their profit figures; unavailability of accurate data on the extent of international involvement for two firms; severe discontinuities in diversification strategy for five firms that changed their core business over the period of study; and post-1982 discontinuation of independent business operations due to mergers or acquisitions for six firms.

To compute our three diversification indices in the measure we need to obtain data on the relative size distribution of firms’ operations across industry segments (two-digit SIC codes), geographic market areas, and business segments (four-digit SIC codes). The necessary data were obtained from Dun and Bradstreet’s ‘America’s Corporate Families’, Dun and Bradstreet’s ‘America’s Corporate Families and International Affiliates’, and personal inquiries to individual sample firms when published data were incomplete for the period of 1982–85. The years 1982–85 were used in our study because they were the only years for which the kind of data needed for our analysis were publicly available at the time of this research.

The size of operations has been measured by value of sales (e.g. Rugman, 1979; Palepu, 1985), number of employees (e.g. Caves, Porter, Spence and Scott, 1980; Lemelin, 1982; Wolf, 1977), or value of assets (e.g. Miller and Pras, 1980; Caves, 1974). In this study, the number of employees is used primarily because no public source is available for either sales or assets data classified by subsidiaries and by business segments needed for our analysis. In addition, it is not clear for our purpose that either sales or assets data are necessarily better than the number of employees because both sales and assets data, when obtainable, would likely be distorted by foreign exchange fluctuations, different currency translations, and international financial maneuverings (e.g. transfer pricing practices). However, the number of employees also has its shortfalls. Since labor cost variations and possible systematic differences in technological intensity of firms’ operations exist across international market areas, the number of employees for a given size of operations could vary across geographic areas.

When only aggregate information on the number of employees for a subsidiary was available and the subsidiary has multiple business segments, as Caves et al. (1980) proposed, the aggregate employee figure was distributed to the various business segments according to a geometric series, each business segment being only half as important as the preceding one. This was possible under the Dun and Bradstreet file since it arranges business segments in decreasing order of importance. Caves et al. (1980) showed, based on a sensitivity analysis using the same Dun and Bradstreet file we employed, that this method yields estimates of diversification that are reasonably similar to the results based on known figures. Lemelin (1982) adopted the same method in his analysis, explaining it in detail.

The literature holds diverse views on what constitutes the relevant international market units, ranging from individual countries (e.g.
Cohen, 1972; Caves, 1982), to homogeneous groupings of countries (e.g. Hirsch and Lev, 1971; Miller and Pras, 1980), to a two-market view, domestic versus foreign (e.g. Rugman, 1979; Wolf, 1975, 1977). The literature seems to share, however, a common spirit that the choice of the relevant geographic unit should be based on between-market heterogeneity.

Following Hirsch and Lev (1971) and Miller and Pras (1980), this study defined international market areas through the groupings of countries into six relatively homogeneous global market areas based on economic and political conditions. These market areas include: North America (U.S. and Canada); the European Community and its associates; Japan and other developed (industrialized) countries; developing (industrializing) countries; less developed countries; and centrally planned economies. While admittedly some degree of subjectivity is involved in this approach's homogeneous groupings, it does allow us to focus on between-market heterogeneity.

As explained in the Global Diversification Measurement and Hypotheses section, firms which were designated either nondiversifiers or dual-strategy diversifiers, totalling 49 firms, were omitted from the final analysis. Thus the remaining 62 sample firms were included in our final analysis: 18 related, high global market diversifiers (Group 1); 17 related, low global market diversifiers (Group 2); 13 unrelated, high global market diversifiers (Group 3); and 14 unrelated, low global market diversifiers (Group 4).

Data for the profit performance measures were obtained from Standard and Poor's Standard Corporation Records. This study employed two profit ratios: operating profit margin (OPM = operating profit before deducting interest expense, expressed as a percentage of gross income); and return on assets (ROA = after tax earnings plus interest, expressed as a percentage of stockholders' equity plus long-term debt). The first ratio is used to measure the relative efficiency with which the firm produces its output and is particularly well suited to reflect the attainment of synergies in business operations through diversification. The latter ratio, widely used as a profit performance measure in diversification research, assesses the relative efficiency in the utilization of the firm’s total assets. Both ratios, controlling for differences in financial structure across firms, well serve the purpose of diversification research of this kind (e.g. Montgomery, 1985).

While our analysis based on 4 years of corporate performance data (1982–85) is within the previous research practices (e.g. Christensen and Montgomery, 1981; Rumelt, 1982; Bettis and Mahajan, 1985), it can be biased for newly diversified firms. This is especially true for firms recently diversified into new international market areas since such diversification tends to involve initial accounting losses due to the costs of establishing a new market position in an unfamiliar environment. However, such bias should not seriously affect the results of our analysis since an examination of Dun and Bradstreet's 1976/77 'Who Owns Whom' and National Register's 1977 'Directory of Corporate Affiliations' shows that 87 percent of our sample firms' subsidiaries were in operation by 1976.

**METHODOLOGY**

From several measures of profit growth and stability found in the literature, the following statistic, proposed by Hunter and Coggin (1983), was reasoned as best suited for the purpose of this study:

\[
\begin{align*}
\text{Growth}_{\text{OPM}} &= b/\overline{\text{OPM}} \times 100 \\
\text{Growth}_{\text{ROA}} &= b/\overline{\text{ROA}} \times 100 \\
\text{Instability}_{\text{OPM}} &= \sigma_{\text{OPM}} \sqrt{1-R^2/\text{OPM}} \times 100 \\
\text{Instability}_{\text{ROA}} &= \sigma_{\text{ROA}} \sqrt{1-R^2/\text{ROA}} \times 100
\end{align*}
\]

where:

- Growth$_{\text{OPM(ROA)}}$ is the growth index of operating profit margin (return on assets); $b$ is the raw-score regression coefficient from the simple linear OPM(ROA) trend regression (i.e. $\text{OPM}_t = a + b_t + e_t$, $\text{ROA}_t = a + b_t + e_t$), and $\overline{\text{OPM(ROA)}}$ is the arithmetic mean of OPM(ROA) time-series. Instability$_{\text{OPM(ROA)}}$ is the instability index of OPM(ROA), $\sigma_{\text{OPM(ROA)}}$ is the standard deviation of OPM(ROA), $R^2$ is the coefficient of determination from the simple linear OPM(ROA) trend regression.
The growth measure employed here is simple to calculate and highly correlates with the generally accepted log-linear model tested by Hunter and Coggin (1983). In addition, the measure is unaffected by negative or zero values in the OPM(ROA) time-series which have to be deleted or further transformed in the log-linear model. The suggested growth statistic multiplied by 100 gives an estimate of the average percent growth in OPM(ROA) per unit of time.

The above instability measure was selected for the following reasons. First, unlike the simple variance approach, this measure does not confound stable growth or stable decline with variability. Second, the measure divided by OPM(ROA) assesses instability independent of the absolute level of OPM(ROA). Finally, this measure has clear advantages over $1 - R^2$ that has been a frequently used approach. This is because $1 - R^2$ is not only a function of the amount of dispersion about the regression line but also a function of the steepness of the slope of regression line; thus it is correlated with the rate of profit growth. Moreover, $1 - R^2$ will erroneously assume a value of 1.00 when profits remain unchanged over time (e.g. OPM, = OPM, = OPM, = ... = OPM,). These flaws of $1 - R^2$ are corrected under the approach we employ (Hunter and Coggin, 1983). The simple linear trend analysis for the growth and the stability measures was based on eight data points, representing semi-annual OPM(ROA) for the period of the study, 1982 through 1985.

The hypotheses previously discussed were tested using orthogonal planned comparison by examining the impact of a strategic mode of diversification, pursued by a firm in 1982, on its profit performance over the period of 1982-85. This approach instead of ANOVA is used because we are interested in specific comparisons among four groups pursuing distinct strategic modes of diversification rather than the overall difference.

With unequal sample sizes in the four strategic groups, the planned comparison can be expressed as follows:

$$D = \sum_{j} n_j c_j$$

where:

$D$ is comparison or contrast,

$n_1, n_2, \ldots, n_j$ is number of subjects in group 1, 2, \ldots, $j$, respectively,

$c_j$ is corresponding coefficient in group $j$.

To test the hypotheses, three alternative sets of two orthogonal comparisons for both growth and stability were devised. The orthogonal coding scheme is shown in Table 1; this table is designed to meet the requirements of orthogonal comparison. Those are: the sum of the coefficients in a given comparison and the products of the coefficients for their respective elements in each set of the orthogonal comparisons should equal zero.

The significances of the comparisons hypothesized were then examined through the following multiple regression equations:

$$\text{Growth (stability)}_{\text{OPM(ROA)}} = a_1 + b_1x_1 + b_2x_2 + e$$

$$\text{Growth (stability)}_{\text{OPM(ROA)}} = a_3 + b_3x_3 + b_4x_4 + e$$

$$\text{Growth (stability)}_{\text{OPM(ROA)}} = a_3 + b_3x_3 + b_6x_6 + e$$

Since the independent variables in each equation were orthogonally coded, each $b$ reflects the comparison described in the vector with which it was associated. Accordingly, $t$ statistic is a test of the comparison reflected in the vector associated with $b$. As Pedhazur (1982) noted, overall significance of the multiple regression is not necessary for planned comparisons. This is because the interest of such analysis lies in the $bs$ corresponding to the specific differences hypothesized prior to the analysis rather than the overall variance explained by the comparisons. Thus, meaningful conclusions can be drawn from the significance of $b$ in our analysis even when the overall multiple regression is not significant (i.e. low $R^2$). While the hypotheses for growth suggest that we expect to find all $bs$ except for $b_6$ to be significant, the hypotheses for stability suggest all $bs$ except for $b_3$ to be significant.

**EMPIRICAL ANALYSIS AND RESULTS**

The results of the empirical analysis are discussed in the sequence of three sets of two orthogonal comparisons presented in the methodology section. The sample size, mean scores of profit growth (i.e. Growth$_{\text{OPM}}$ and Growth$_{\text{ROA}}$) and stability (i.e. Instability$_{\text{OPM}}$ and Instability$_{\text{ROA}}$) for the four groups are reported in Table 2. The results of the first, second, and third set of orthogonal planned comparisons are reported in Table 3 for both profit growth and stability.
Table 1. The coding scheme of orthogonal comparisons

<table>
<thead>
<tr>
<th>Group</th>
<th>Sample size</th>
<th>First set orthogonal comparisons</th>
<th>Second set orthogonal comparisons</th>
<th>Third set orthogonal comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1*</td>
<td>18</td>
<td>17 0 13 0 7 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2</td>
<td>17</td>
<td>-18 0 0 14 0 13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G3</td>
<td>13</td>
<td>0 14 -18 0 0 -17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4</td>
<td>14</td>
<td>0 -13 0 -17 -9 0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* GI = related diversifiers with high global market diversification (RD-HG).
* G2 = related diversifiers with low global market diversification (RD-LG).
* GI = unrelated diversifiers with high global market diversification (UD-HG).
* G2 = unrelated diversifiers with low global market diversification (UD-LG).

\[ X_i^{+} \] = coded vector for contrasting GI and G2.
\[ X_2 \] = coded vector for contrasting GI and G3.
\[ X_3 \] = coded vector for contrasting GI and G4.
\[ X_4 \] = coded vector for contrasting G2 and G3.
\[ X_5 \] = coded vector for contrasting G2 and G4.

Table 2. Sample size and mean of profit growth and instability

<table>
<thead>
<tr>
<th>Sample size</th>
<th>Growth_{OPM}</th>
<th>Growth_{ROA}</th>
<th>Instability_{OPM}</th>
<th>Instability_{ROA}</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1*</td>
<td>18</td>
<td>1.08 -3.81</td>
<td>12.04</td>
<td>26.82</td>
</tr>
<tr>
<td>G2*</td>
<td>17</td>
<td>0.77 -5.20</td>
<td>46.11</td>
<td>53.52</td>
</tr>
<tr>
<td>GI*</td>
<td>13</td>
<td>-2.14 -9.39</td>
<td>17.92</td>
<td>29.55</td>
</tr>
<tr>
<td>G4*</td>
<td>14</td>
<td>-9.84 -22.79</td>
<td>29.82</td>
<td>38.95</td>
</tr>
</tbody>
</table>

* Refer to Table 1.

Hypotheses 1a and 1b, and 2a and 2b, are examined through the first set of orthogonal planned comparisons. As shown in the upper part of Table 3, hypothesis 1a is not supported for both profit growth measures. This indicates that RD-HG (GI) does not exhibit higher profit growth than RD-LG (G2). Hypothesis 2a concerning the growth difference between UD-
Table 3. Results of planned comparisons

<table>
<thead>
<tr>
<th>First set</th>
<th>Second set</th>
<th>Third set</th>
</tr>
</thead>
<tbody>
<tr>
<td>X₁</td>
<td>X₂</td>
<td>R²</td>
</tr>
<tr>
<td>β coefficient</td>
<td>Standard error of β</td>
<td>t-statistic</td>
</tr>
<tr>
<td>For Growth_{OPM}:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0088</td>
<td>0.2851</td>
<td>0.0311</td>
</tr>
<tr>
<td>0.1404</td>
<td>0.2073</td>
<td>0.1668</td>
</tr>
<tr>
<td>0.0626</td>
<td>1.3753*</td>
<td>0.0867</td>
</tr>
<tr>
<td>0.0940</td>
<td>0.4964</td>
<td>0.0332</td>
</tr>
<tr>
<td>-0.9731</td>
<td>-0.4407</td>
<td>0.0867</td>
</tr>
<tr>
<td>-0.4299</td>
<td>0.6348</td>
<td>0.5418</td>
</tr>
<tr>
<td>-2.2632***</td>
<td>-0.6943</td>
<td>-0.3499</td>
</tr>
<tr>
<td>-0.7629</td>
<td>-0.4381</td>
<td>0.0810</td>
</tr>
<tr>
<td>-2.1785***</td>
<td>-0.6735</td>
<td>-0.2002</td>
</tr>
</tbody>
</table>

* p < 0.10; ** p < 0.05; *** p < 0.025.

HG (G3) and UD-LG (G4), however, is supported for both Growth_{OPM} and Growth_{ROA}.

For profit stability, as shown in the lower part of Table 3, a significant difference is observed between RD-HG (G1) and RD-LG (G2) but not between UD-HG (G3) and UD-LG (G4). Thus, while hypothesis 1b is supported, hypothesis 2b is not.

The second set of orthogonal planned comparisons deals with hypotheses 3a and 3b, and 4a and 4b. With respect to profit growth, the upper part of Table 3 reveals that related diversifiers do not outperform unrelated diversifiers in the case of high global market diversification (G1 and G3). However, related diversifiers outperform unrelated diversifiers in the case of low global market diversification (G2 and G4). Thus, while hypothesis 3a is not supported, hypothesis 4a is.

The results of the two comparisons (G1 and G3; G2 and G4) for profit stability are shown in the lower part of Table 3. The results do not exhibit significant differences for both comparisons. Hypotheses 3b and 4b, thus, are not supported.

Hypotheses 5a and 6a are supported for both Growth_{OPM} and Growth_{ROA} in the third set of orthogonal planned comparisons. As revealed in the upper part of Table 3, RD-HG (G1) outperforms UD-LG (G4) in profit growth. On the other hand, RD-LG (G2) shows only marginally but not significantly higher profit growth than UD-HG (G3). For profit stability the lower part of Table 3 shows that no significant profit stability difference exists between RD-HG (G1) and UD-LG (G4). However, UD-HG (G3) exhibits significantly higher profit stability relative to RD-LG (G2). Hence, both hypotheses 5b and 6b are supported.

DISCUSSIONS AND CONCLUSIONS

Recent years have seen abundant research examining the profit performance impact of corporate diversification strategies. Previous studies in this regard have focused on either the product or the international market dimension of corporate diversification. The applicability of these approaches, however, has waned as an increasing number of firms have pursued global diversification involving diversification across global market space with varying modes (related/unrelated) of product diversification. Thus, a pressing need has existed to integrate both the product and the international market dimensions into the analysis of the corporate profit performance impact of diversification.

This research identified four distinct strategic modes of global diversification that can have different corporate profit performance impli-
cations. These four strategic modes are: related diversifiers with high global market diversification; related diversifiers with low global market diversification; unrelated diversifiers with high global market diversification; unrelated diversifiers with low global market diversification.

Results of our analysis suggest that the corporate profit performance impact of related and unrelated diversification may vary contingent upon the extent of a firm's international market diversification. Specifically, the findings indicated the following. First, unrelated diversifiers with high global market diversification achieve higher corporate profit growth than unrelated diversifiers with low global market diversification. However, there is no significant difference in the corporate profit growth of related diversifiers with high and low global market diversification. Second, with respect to profit stability, related diversifiers with high global market diversification significantly outperform related diversifiers with low global market diversification. No significant difference exists, however, in the profit stability of unrelated diversifiers with high and low global market diversification. Third, the different strategic modes of product diversification (related/unrelated) differentiate the corporate profit growth of low global market diversifiers but not of high global market diversifiers. With respect to profit stability, however, a mode of product diversification does not differentiate either low or high global market diversifiers. Fourth, while related diversifiers with high global market diversification enjoy higher profit growth than unrelated diversifiers with low global market diversification, these two strategic groups were statistically indifferent in terms of profit stability. Finally, no evidence was found that related diversifiers with low global market diversification achieve supernormal profit growth over unrelated diversifiers with high global market diversification or vice-versa. In terms of profit stability, however, the latter did achieve better performance than the former.

Interestingly, our findings partly agree with, and partly dissent from, those of previous studies. Our findings are consistent with those of previous research in that related diversification is generally associated with favorable profitability performance. However, similar to Bettis and Mahajan (1985), we also found that no guarantee exists that related diversifiers achieve favorable profit performance in both growth and stability. Our findings dissent from those of previous studies with respect to the impact of unrelated diversification on corporate profit performance; while previous research has indicated that favorable profit performance is generally not associated with unrelated diversification, our results suggest that unrelated diversification can be associated with favorable profit performance when firms are well diversified internationally.

These findings have significant implications for both strategy researchers and corporate managers. Corporate diversification needs to be viewed as having distinct yet interactive strategic dimensions—product and international market—and they would do well to recognize both the different and the joint effect of these dimensions on corporate profit performance. Moreover, as Bettis and Mahajan (1985) proposed, in relating corporate profit performance to diversification, it is necessary to consider both corporate profit growth and stability.

A future research extension of this work is to conduct an in-depth study of the profit growth/stability tradeoff behavior involved in various modes of global diversification. Hopefully, by explicitly recognizing the international market dimension as an important strategic element of corporate diversification, one might manage to uncover diversification strategies in which firms achieve both favorable profit growth and stability.

APPENDIX: GLOBAL DIVERSIFICATION MEASUREMENT

Suppose a firm operates in $N$ geographic market areas ($a$), the entropy measure of total diversification (DT) can be defined as follows.

$$DT = \sum_{a=1}^{N} \sum_{ia} P_{ia} \ln(1/P_{ia})$$

Where $P_{ia}$ is the proportion of the size of the $i^{th}$ business segment in the $a^{th}$ market area to a firm's total size of operations.

Unrelated diversification (UD) assesses the extent of a firm's diversification across industry segments. Suppose a firm operates in $M$ industry segments ($j$), the entropy measure of UD is defined as follows.
Global Diversification

Global market diversification (GMD) assesses the dispersion of a firm's operations across global market areas (a). Suppose a firm operates in M industry segments, the entropy measure of GMD is defined as follows.

\[
GMD = \sum_{j=1}^{M} \sum_{\alpha j} P_j \sum_{\alpha j} P_{aj} \ln(P_{aj})
\]

Where \( P_{aj} \) is the proportion of the \( j^{th} \) industry segment in the \( a^{th} \) market area to the total size of a firm and \( P_{aj} = P_{aj}/P_j \).

Global related diversification (GRD) assesses the extent of diversification across business segments within industry segments within global market areas. Suppose a firm operates in M industry segments, the entropy measure of GRD is defined as follows.

\[
GRD = \sum_{j=1}^{M} \sum_{\alpha j} P_j \sum_{\alpha j} P_{iaj} \sum_{\alpha j} \sum_{\alpha j} P_{iaj} \ln(P_{iaj})
\]

Where \( P_{iaj} \) is the proportion of the \( i^{th} \) business segment within the \( j^{th} \) industry segment in the \( a^{th} \) market area to the total size of a firm and \( P_{iaj} = P_{iaj}/P_j \).

Under the above definitions the sum of the UD, GMD, and GRD components should be equal to total diversification. The demonstration of this mathematical proof is as follows:

\[
UD + GMD + GRD = \sum_{j=1}^{M} P_j \ln(P_j) + \sum_{j=1}^{M} P_j \sum_{\alpha j} P_{aj} \ln(P_{aj}) + \\
\sum_{j=1}^{M} P_j \sum_{\alpha j} P_{aj} \sum_{\alpha j} P_{iaj} \ln(P_{iaj})
\]

\[
= \sum_{j=1}^{M} P_j \left[ \ln(P_j) + \sum_{\alpha j} P_{aj} \ln(P_{aj}) \right] + \\
\sum_{j=1}^{M} P_j \left[ \sum_{\alpha j} P_{aj} \ln(P_{aj}) \right] + \\
\sum_{j=1}^{M} P_j \left[ \sum_{\alpha j} P_{aj} \sum_{\alpha j} P_{iaj} \ln(P_{iaj}) \right]
\]

\[
= \sum_{j=1}^{M} P_j \ln(P_j) + \sum_{\alpha j} P_{aj} \ln(P_{aj}) + \\
\sum_{j=1}^{M} \left[ \sum_{\alpha j} P_{aj} \sum_{\alpha j} P_{iaj} \ln(P_{iaj}) \right]
\]

REFERENCES


Bettis, R. A. and W. K. Hall. 'Diversification strategy,


